

**PATENT COOPERATION TREATY**  
**PCT**  
**INTERNATIONAL PRELIMINARY EXAMINATION REPORT**  
**(PCT Article 36 and Rule 70)**

Applicant's or agent's file reference <b>SETVAL CAS 21</b>	<b>FOR FURTHER ACTION</b>	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)
International application No. <b>PCT/EP 03/14843</b>	International filing date (day/month/year) <b>28.11.2003</b>	Priority date (day/month/year) <b>09.12.2002</b>
International Patent Classification (IPC) or both national classification and IPC <b>F16L15/04</b>		
<p>Applicant <b>VALLOUREC MANNESMANN OIL &amp; GAS FRANCE ET AL</b></p>		
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 7 sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of sheets.</p> <p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li>I <input checked="" type="checkbox"/> Basis of the opinion</li> <li>II <input type="checkbox"/> Priority</li> <li>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li> <li>IV <input type="checkbox"/> Lack of unity of invention</li> <li>V <input checked="" type="checkbox"/> Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li>VI <input type="checkbox"/> Certain documents cited</li> <li>VII <input type="checkbox"/> Certain defects in the international application</li> <li>VIII <input type="checkbox"/> Certain observations on the international application</li> </ul>		
Date of submission of the demand  <b>29.06.2004</b>	Date of completion of this report  <b>18.11.2004</b>	
Name and mailing address of the international preliminary examining authority:   <b>European Patent Office - P.B. 5818 Patentlaan 2  NL-2280 HV Rijswijk - Pays Bas  Tel. +31 70 340 - 2040 Tx: 31 651 epo nl  Fax: +31 70 340 - 3016</b>	<p>Authorized Officer   <b>Mauriès, L</b>  Telephone No. +31 70 340-4356</p> 	

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International application No. PCT/EP 03/14843

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

1-12 as originally filed

**Claims, Numbers**

1-26 as originally filed

**Drawings, Sheets**

1/2-2/2 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- the language of publication of the international application (under Rule 48.3(b)).
- the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- contained in the international application in written form.
- filed together with the international application in computer readable form.
- furnished subsequently to this Authority in written form.
- furnished subsequently to this Authority in computer readable form.
- The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- the description, pages:
- the claims, Nos.:
- the drawings, sheets:

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5.  This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	1-23,25,26
	No: Claims	24
Inventive step (IS)	Yes: Claims	1-23,25,26
	No: Claims	24
Industrial applicability (IA)	Yes: Claims	1-26
	No: Claims	

2. Citations and explanations

**see separate sheet**

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Reference is made to the following documents:  
D1: GB 880 283 A (GILBERT THOMAS LYON) 18 October 1961 (1961-10-18)  
D2: US 2002/158469 A1 (MANNELLA EUGENE J ET AL) 31 October 2002  
(2002-10-31)  
D3: US-A-3 150 889 (WATTS JOHN D) 29 September 1964 (1964-09-29)
2. The document D2 is regarded as being the closest prior art to the subject-matter of claim 1, and shows (the references in parentheses applying to this document): a method for producing a threaded tubular connection consisting of a male tubular element (11) comprising a tapered male thread (16), a female tubular element (13) comprising a tapered female thread (44) which cooperates with said male thread (16), and a deformable sealing ring (36) interposed between the male and female elements to oppose fluid communication between the outside of the threaded tubular connection and the zone of cooperation of said threads, wherein
  - the sealing ring (36) comprising a body and a retaining lip (48) with a radial thickness that is less than that of the body, extending axially towards the thread (16) from a shoulder defining the body, and
  - the free end of the male element (11) is engaged in the female element (13) and the male thread is made up into the female thread, the sealing ring being introduced into a first annular housing (39) provided in the female element in the form of an enlargement of its axial boring extending axially to a shoulder and having a peripheral surface adjacent to said shoulder which cooperates over at least a portion of its axial length with the radially outer surface (see fig. 1) of said sealing ring to radially, compress the latter and establish a sealed contact between said radially outer (47) and inner (48) surfaces of the sealing ring on the one hand, and said peripheral surface of the first housing (39) of the female element and the facing surface of the male element on the other hand, the body then being pushed along the male element by the shoulder of said first housing (39) of the female element (13) after mutual abutment of the two shoulders.
- 2.1 The subject-matter of claim 1 differs from this known from D2 in that the sealing ring is placed around the male element beyond its thread with respect to its free

end, the sealing ring having a thinned zone in the vicinity of the body, said thinned zone being in contact with an annular rib provided as a radial projection on the male element; the sealing ring being progressively introduced into a first annular housing which extends from the free end of the female element; and the annular rib of the male element coming into contact with the retaining lip at the end of makeup beyond said thinned zone, to cause the retaining lip to penetrate into a second annular housing formed in the female element at an axial distance from the first housing to ensure axial retention of the sealing ring by the female element.

The subject-matter of claim 1 is therefore new (Article 33(2) PCT).

2.2 The problem to be solved by the present invention may be regarded as to improve the montage of the threaded connection.

2.3 The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons: the documents cited in the Search Report do not give, individually or in combination, any suggestion to the skilled person to implement the successive steps of paragraph 2.1 in the manner specified in claim 1.

In the method known from D2, the seal (36) is inserted in the groove (34) of the female element prior to engagement with the male element. The seal could be damaged when presenting the male element for connection.

None of the male elements known from D1 and D3 comprise an annular rib that causes the seal to penetrate a second annular housing of the female element at the end of the make up.

2.4 Claims 2 to 23 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

3. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 24 is not new in the sense of Article 33(2) PCT. The document D1 discloses (the references in parentheses applying to this document): a deformable sealing ring (86) for use (interpreted as "suitable for use", see PCT Guidelines Part II, 5.23) in the method according to one of the preceding claims, comprising a body (see e.g. fig. 1) and a retaining lip with a radial thickness that is less than that of the body, extending axially from a shoulder (see fig. 1) defining the body and having a thinned zone in the vicinity of the body which is defined by an annular groove (98) formed in the radial inner surface (92) of the sealing ring.

The groove (98) defines a thinned zone in the vicinity of the body of the seal.

There is no feature in any of the claims 1 to 24 limiting the shape of the groove. Furthermore, the fact that the groove (98) has been designed for another purpose than in the present application is irrelevant for the assessment of novelty (see PCT Guidelines Part II, 5.23).

This makes the groove (98) suitable for receiving an annular projecting rib according to claim 1.

Thus all the features of claim 24 are known from D1.

4. The document D2 is regarded as being the closest prior art to the subject-matter of claim 25. The threaded tubular connection disclosed in this document differs from the subject-matter of this claim at least in that the male element does not have a radially projecting annular rib (for other differences, see paragraph 3.2 of first communication).

The subject-matter of claim 25 is therefore new (Article 33(2) PCT).

- 4.1 The problem to be solved by the present invention may be regarded as to improve the tightness of the connection.

- 4.2 The solution to this problem proposed in claim 25 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons: the documents cited in the Search Report do not give any suggestion to the skilled person to have a threaded tubular connection as in claim 25.

The rib (14) known from D3 does not come into contact with the retaining lip, i.e. a portion of the seal with a smaller radial thickness (on the contrary it contacts the thicker portion of the seal), at the end of the make up to cause it to penetrate into a second annular housing of the female element.

The male element of D1 does not comprise any radially projecting rib. At the end of the make up the seal is in contact (at 92) with a threadless zone (24) of the male element.

5. The subject-matter of claim 26 is novel (Article 33(2) PCT) as none of the prior art documents cited in the Search Report or acknowledged in the description discloses all of the features of these claims.

The documents cited in the Search Report do not give any suggestion to the skilled person to modify a threaded tubular connection obtained by the method according to one of the claims 1 to 23 as substantially disclosed in D3 in the manner specified in claim 26. In particular the features of claim 26, that a radially projecting annular rib provided on the male element being in contact with the

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retaining lip beyond said thinned zone to cause the retaining lip to penetrate into a second annular housing formed in the female element at an axial distance from the first housing to ensure axial retention of the sealing ring by the female element, result from a step being non-obvious in view of the cited prior art. Thus the threaded tubular connection obtained by the method according to one of the claims 1 to 23 according to claim 26 involves an inventive step (Article 33(3) PCT).

6. The subject-matter of claims 1 - 23, 25, 26 can be used or manufactured in industry, and thus looked upon as being industrially applicable.